

# GOODS MOVEMENT: AIR QUALITY IMPACTS & KEY INITIATIVES



SCAG Goods Movement Task Force  
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Peter Greenwald, Senior Policy Advisor, SCAQMD



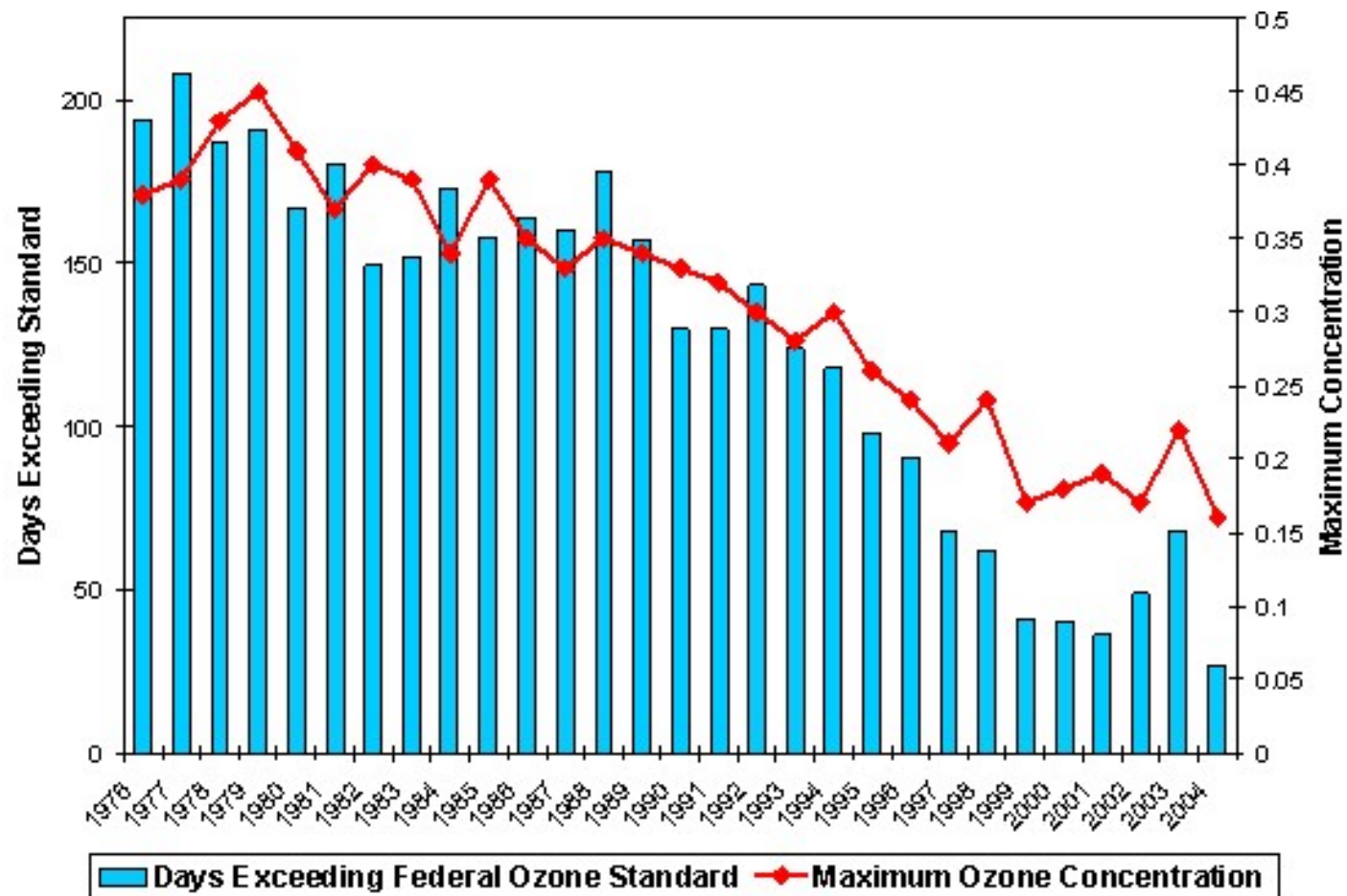






## Air Quality Setting: *One Hour Ozone Standard*

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# USC Children's Health Study

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- Findings published in *New England Journal of Medicine* September 2004
- Study of children over 8-year period
- 12 communities in Southern California



*Are chronic respiratory effects caused by Southern California's air pollution?*

## Findings

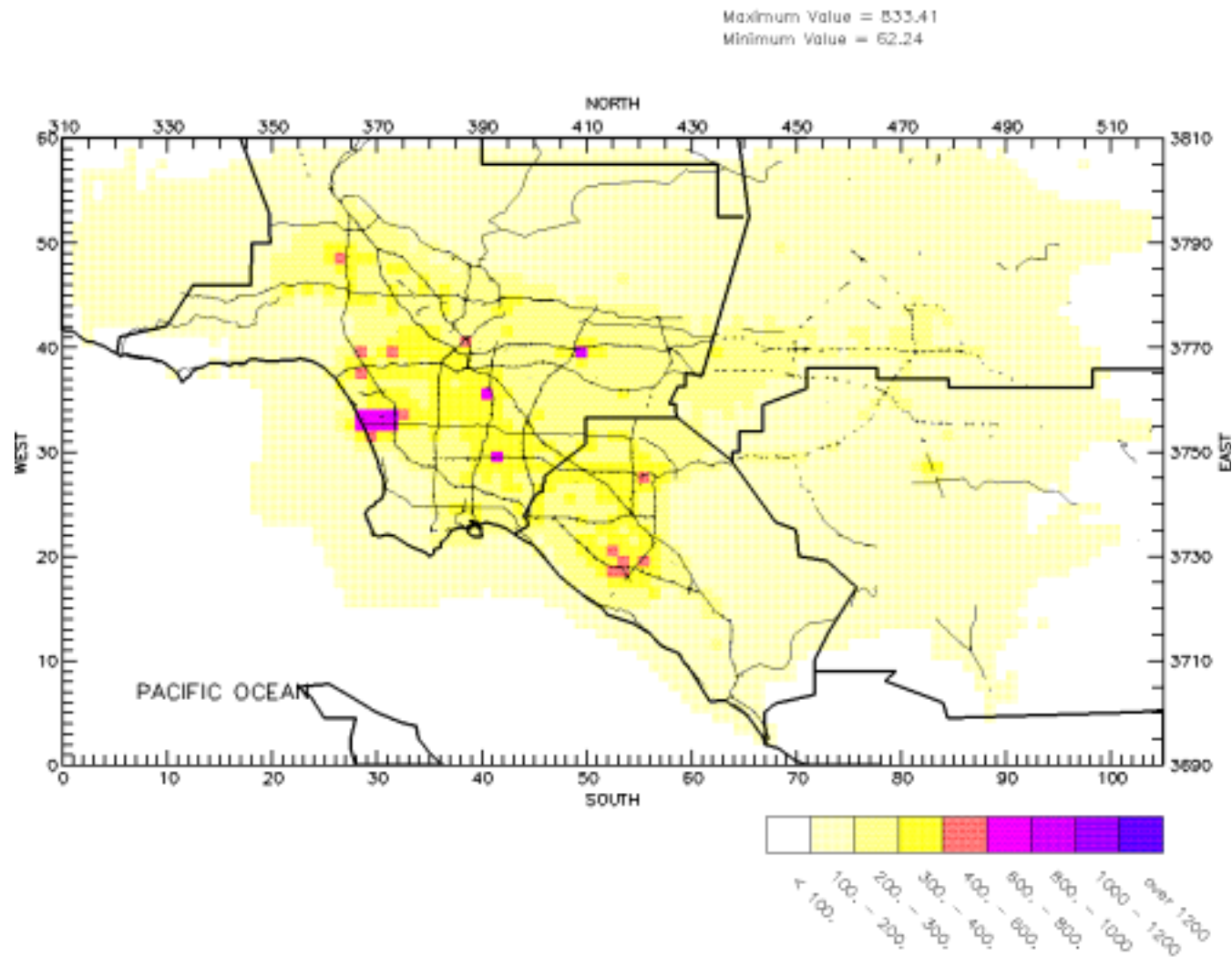
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- Lower lung-function growth rate associated with  $PM_{10}$ ,  $PM_{2.5}$ ,  $NO_2$  and acid vapor
- “By age 18, lungs of many children growing up in smoggy areas are underdeveloped and will likely never recover”
- Pollutants of harm “derive from vehicle-related emissions and combustion of fossil fuels”
- *“When we began the study 10 years ago, we had no idea we would find effects on the lung this serious.”* John Peters, M.D., study's senior author



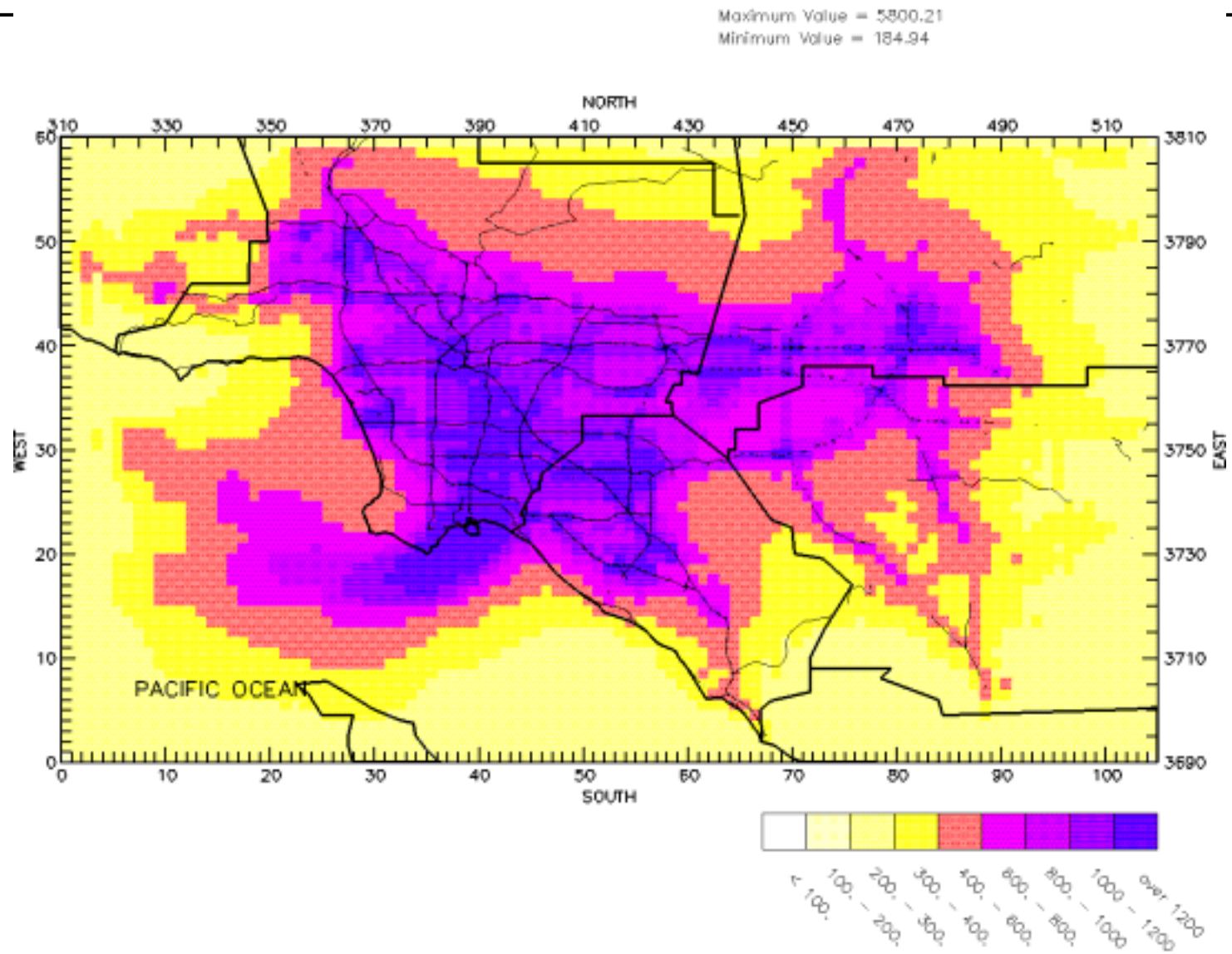
# Modeled Cancer Risk Excluding Diesel

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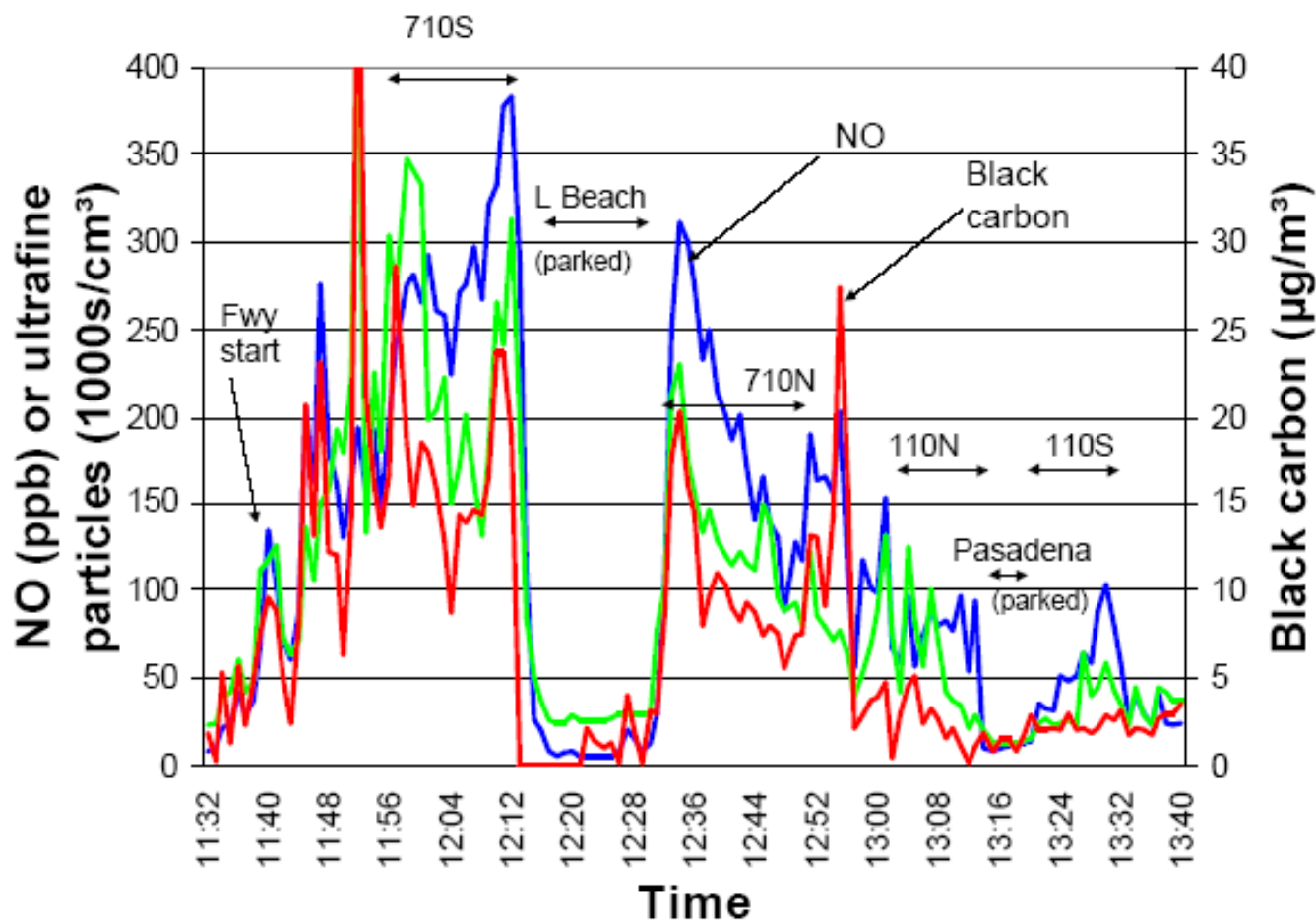




# Modeled Cancer Risk: All Sources



# Particle Counts on Roadways



From: Fruin, CARB presentation, December 9, 2004

# Particle Counts in Southern California

## *Per Cubic Centimeter*

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Area	Particle Count
Coastal area	600-2,000
Office Spaces	500-2,000
Urban air	10,000 - 40,000
Industrial site	up to 100,000's
Freeways	40,000 - > 1,000,000

From Westerdahl, 2004.

## Key Air Quality Challenges

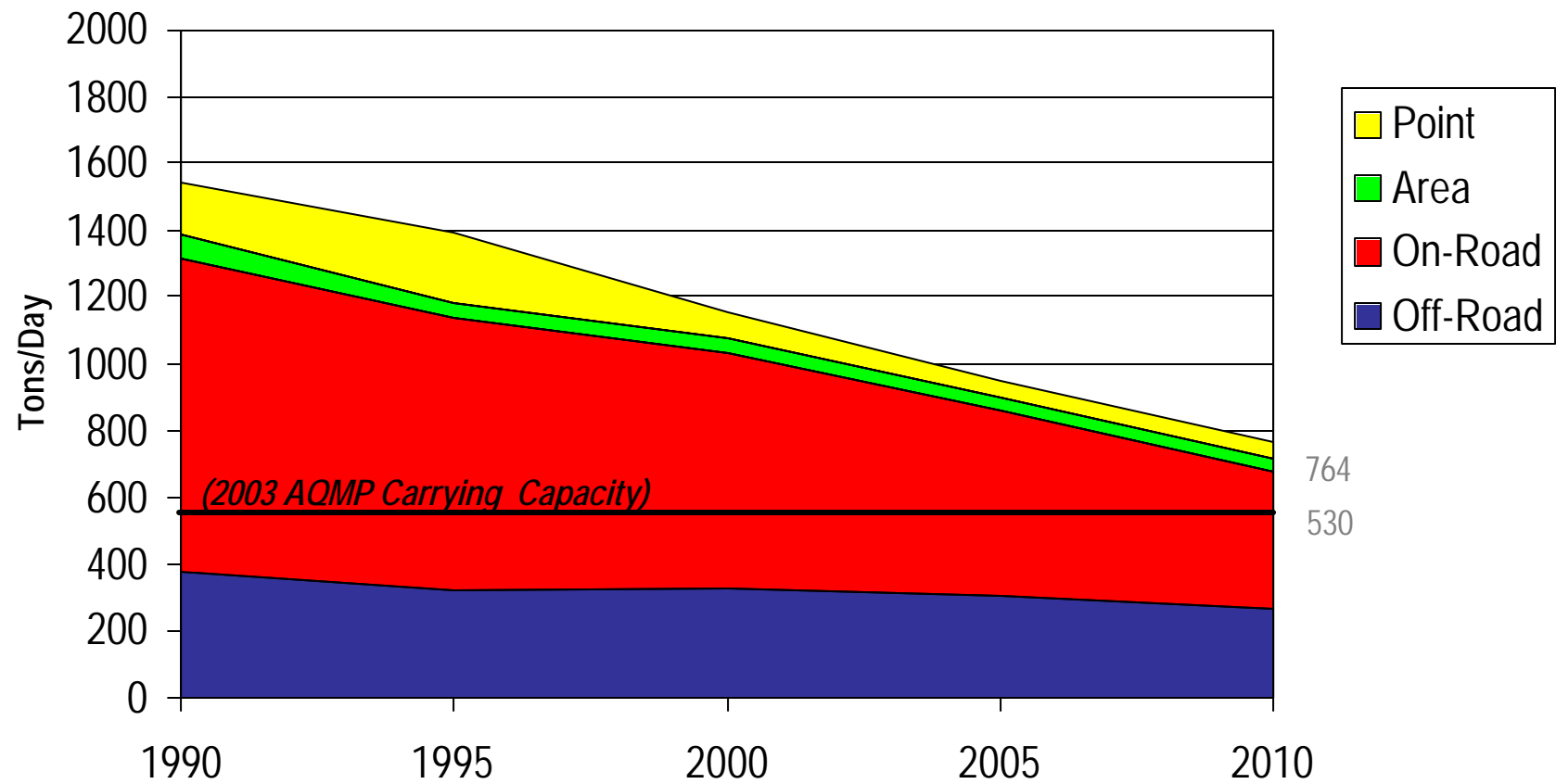
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- “Easy” reductions achieved
- “Black box”
- New 8-hour ozone & PM 2.5 standards
- “Federal” sources: Marine Vessels, Locomotives, Aircraft



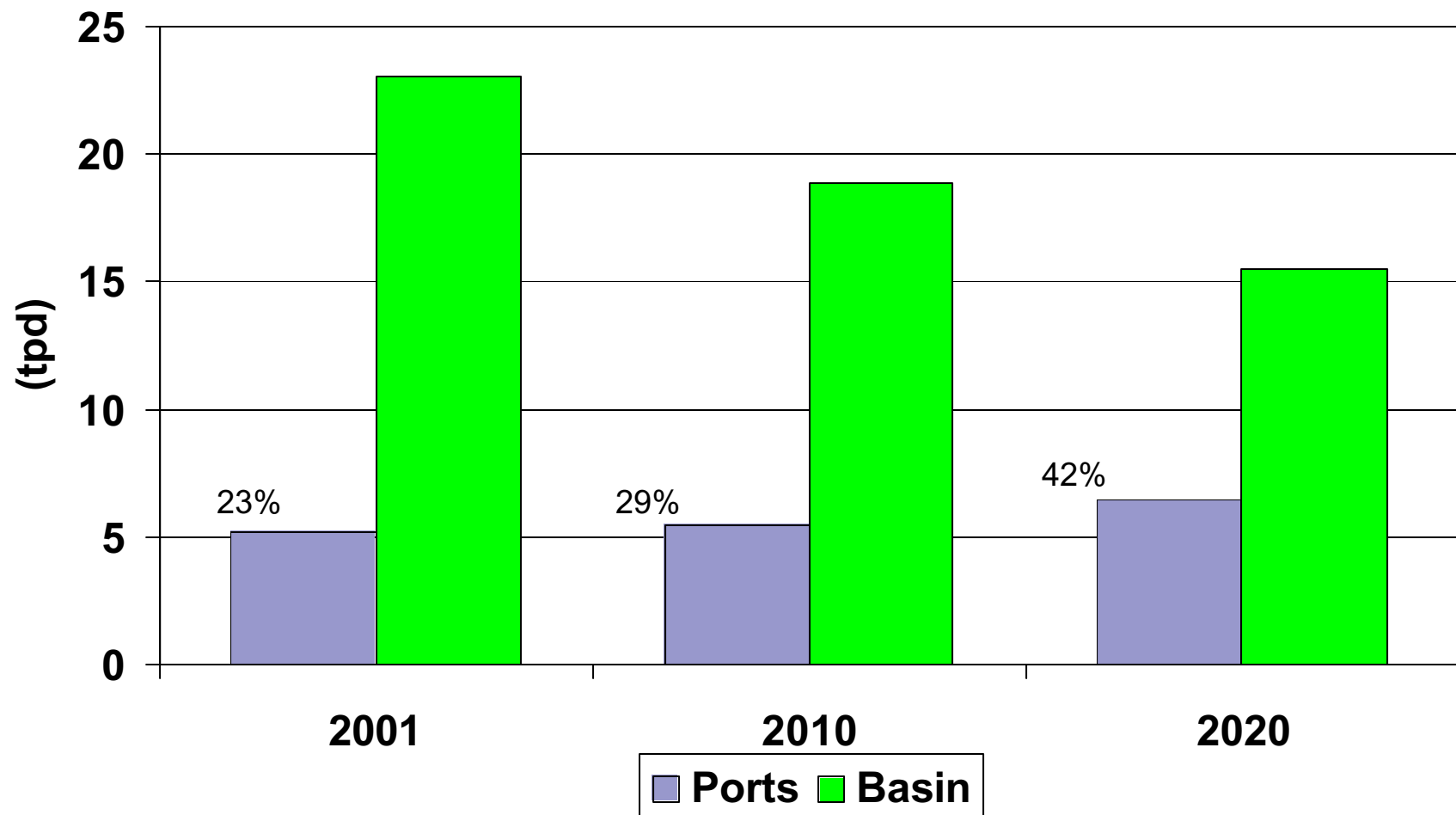
# NOx Emissions

Projections Based on Adopted Regulations



## Contribution of Port-Related Sources to Regional Emissions Diesel PM \*

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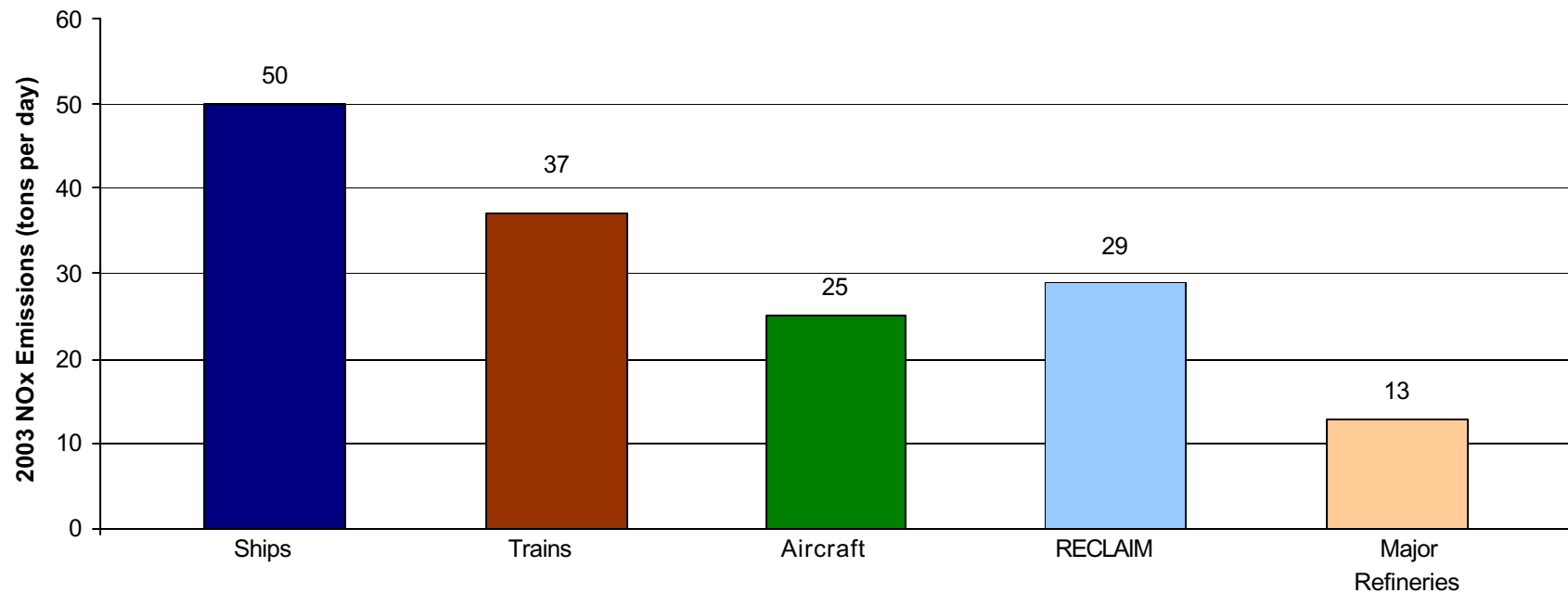


\*Assuming ports recent baseline inventories and 2003 AQMP growth and control factors.

# Comparison of Key Sources (NO<sub>x</sub>)

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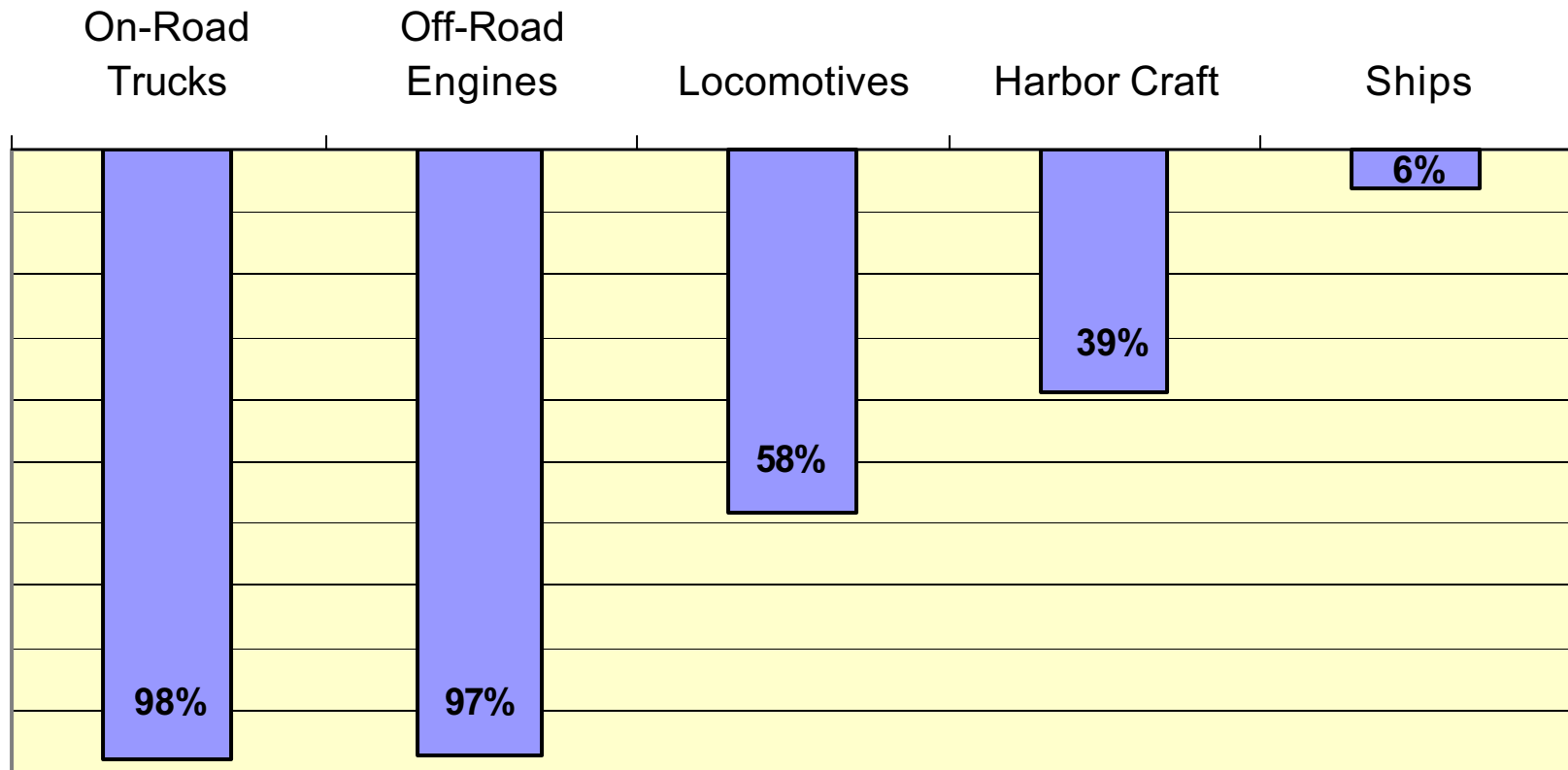
**Emissions Contribution of Several Source Categories**



# Stringency of Adopted NOx Rules for New Engines

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(Percent Reduction Based on Adopted New Engine Standards)





# Federal Standards for Marine Vessels & Locomotives

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- Standards for Large Vessels
  - Limited benefit; same as pre-existing international limits
  - Not applicable to foreign flag vessels (over 90% of emissions)
- Standards for Locomotives
  - Control technologies have advanced since EPA standards were adopted

# Upcoming Federal Rulemakings

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- Category 3 (Largest) Vessels
- Locomotives and Smaller Marine Vessels
- Issues:
  - Will EPA regulate foreign flag vessels?
  - Will standards be adequate for this area?
  - Long useful life sources — will rules expedite benefits in highly polluted areas?

## State & Local Actions

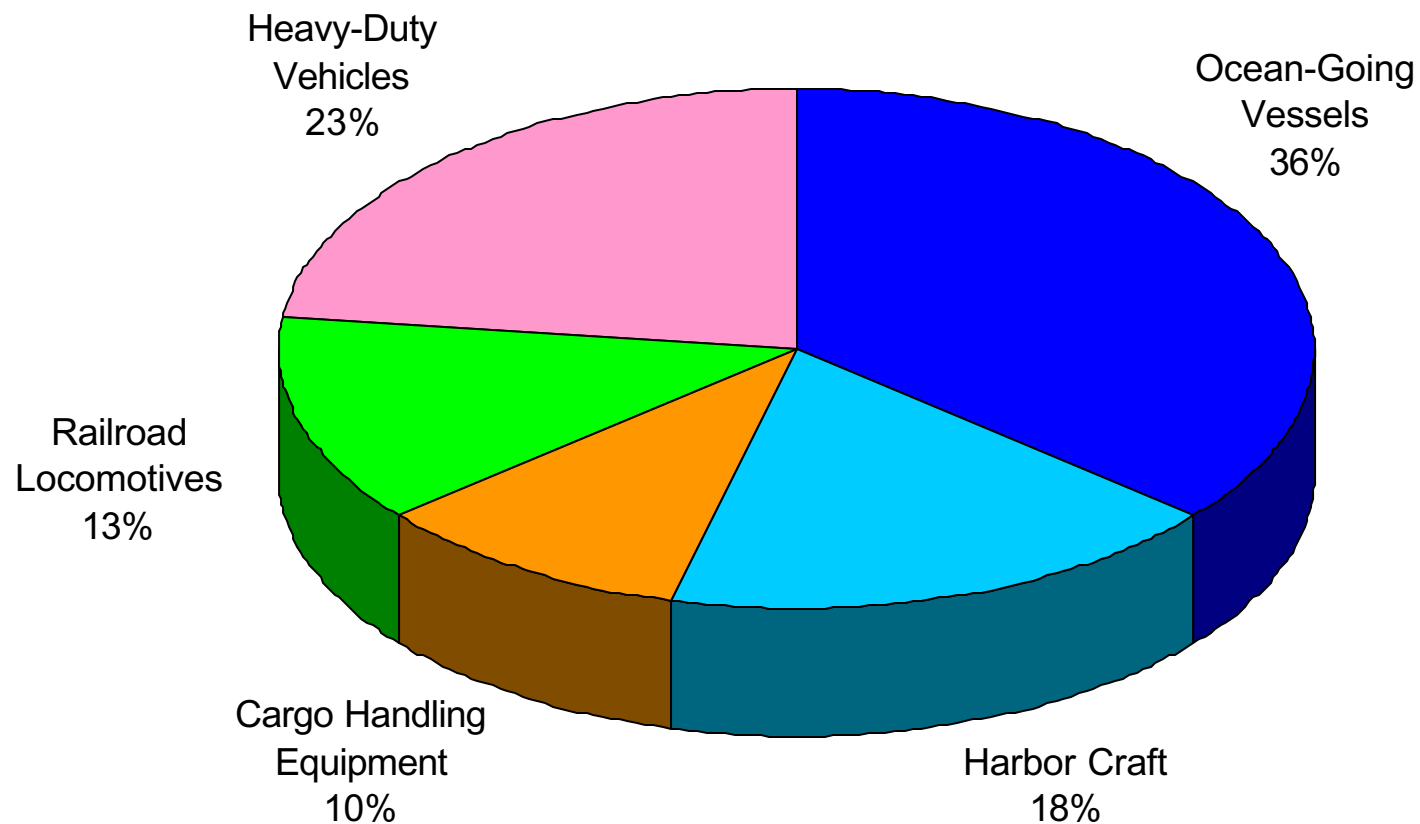
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- CEQA / NEPA
- CARB & SCAQMD: cargo handling equipment rule
- Advocacy for Federal Standards
- CARB Locomotive MOUs
- State Legislation
- Funding Programs, e.g. Carl Moyer; West Coast Diesel Collaborative
- Cal EPA/BTH
- SCAQMD: railyard risk assessment & idling rules
- Efforts by Ports of Long Beach & Los Angeles . . .

## POLA No Net Increase Report

### NOx Emission Distribution by Source Category (2001)

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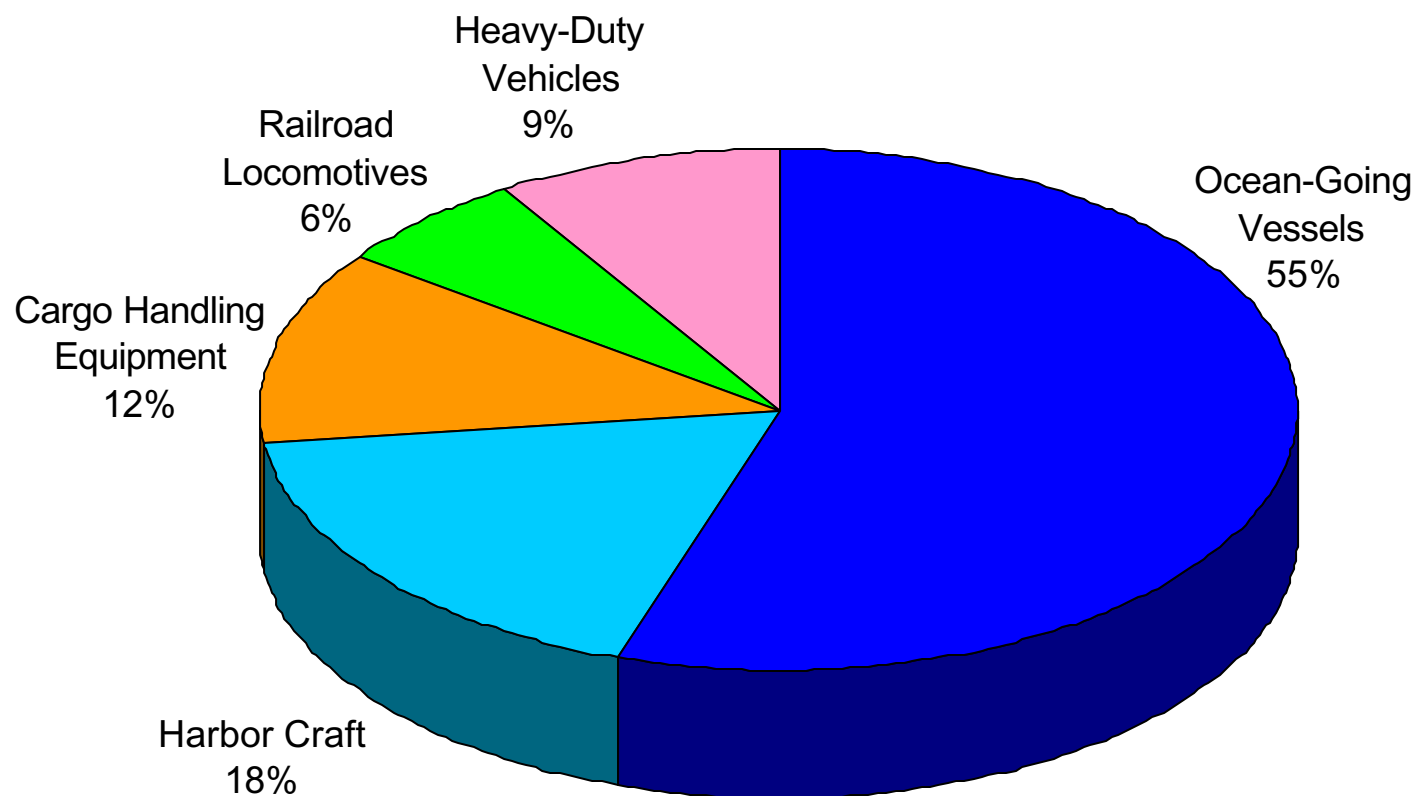


Total NOx = 53 t/d



## PM10 Emissions Distribution by Source Category (2001)

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Total PM10 = 2.7 t/d

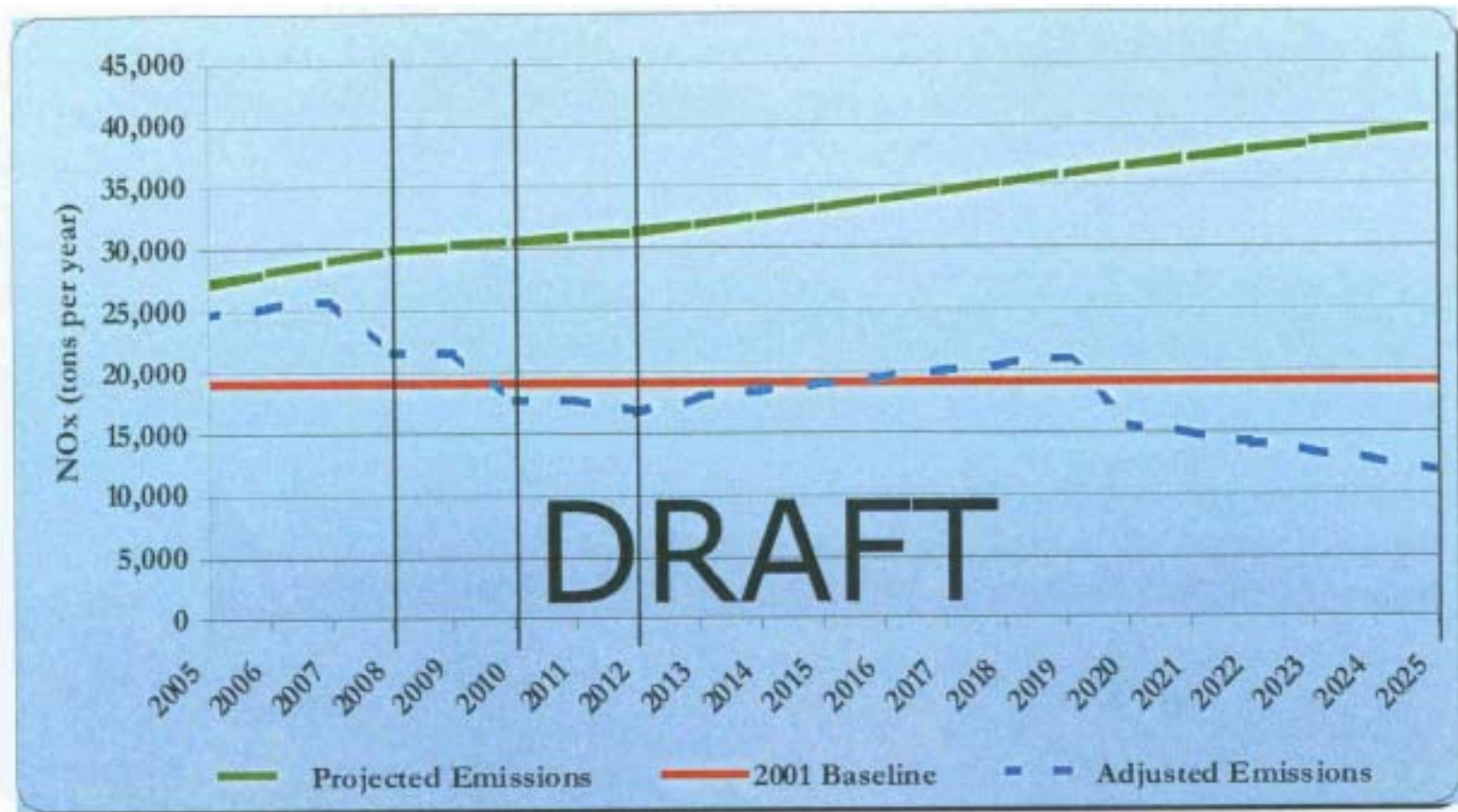
# Example NNI Control Measures

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- Ocean Going Vessels
  - Low-Sulfur Fuels, Shore Power, Vessel Speed Reduction, NOx Limits for Main & Auxiliary Engines,
- Cargo Handling Equipment
  - Repower & Retrofit, Low Emission Purchases
- Trucks
  - Truck Modernization
- Rail
  - Hybrids or Alt Fuel Switchers, Low-Sulfur Fuels, Idling Controls, Emission Limits

# NOx

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# PM<sub>10</sub>

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